

## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.

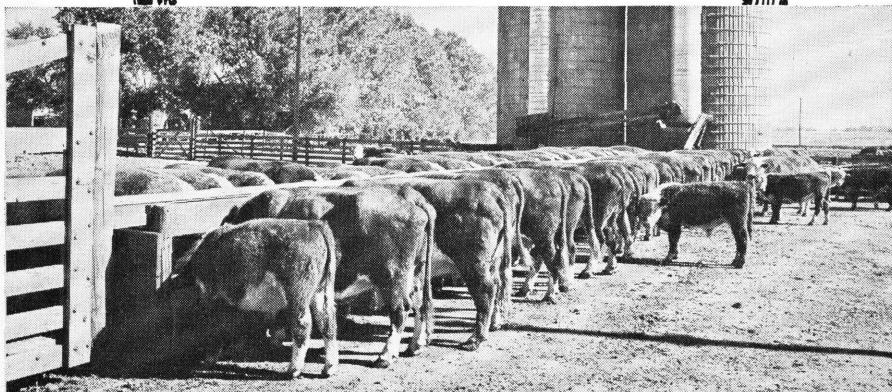
984F  
Cp. 2

U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL LIBRARY

MAR 5 - 1963

CURRENT AGRICULTURAL RECORD

# Feedlot and Ranch Equipment for Beef Cattle



Farmers' Bulletin No. 1584

UNITED STATES DEPARTMENT OF AGRICULTURE

**USDA, National Agricultural Library  
NAL Bldg  
10301 Baltimore Blvd  
Beltsville, MD 20705-2351**

## **CONTENTS**

	<b>PAGE</b>
Pasture or range equipment-----	3
Shelters-----	3
Back rubbers-----	5
Cattle guards-----	6
Feedlot equipment-----	6
Arrangement-----	6
Silos-----	8
Feeding equipment-----	8
Corral equipment-----	13
Fences-----	14
Scales-----	15
Chutes-----	16

Washington, D.C.

Revised January 1963

---

For sale by the Superintendent of Documents, U.S. Government Printing Office  
Washington 25, D.C. - Price 10 cents

# **FEEDLOT AND RANCH EQUIPMENT FOR BEEF CATTLE**

**By R. L. DAVIS**, Animal Husbandman, Animal Husbandry Research Division, and  
**W. F. EDGERLEY**, Agricultural Engineer, Agricultural Engineering Research Division, Agricultural Research Service

Equipment and housing for beef cattle need not be expensive or elaborate. Strength and practical use are the objectives. Strength is particularly important for equipment used with range cattle that are not accustomed to restraint and are handled infrequently.

The equipment described in this bulletin may be built by a farmer or rancher with available labor, materials, and tools. The initial cost usually governs the choice between homemade and commercially made equipment. Sometimes, commercial equipment may be the most economical to use because it is more convenient and more durable than homemade equipment.

All the equipment described in this bulletin may not be adaptable to your needs. Designs to meet any special needs for your area may be obtained from your county agricultural agent or State extension service.

Complete working drawings of many items described in this bulletin may be obtained through your county agent or from the extension agricultural engineer at most State agricultural colleges. Be sure to give the *plan number* on your order. There is usually a small charge.

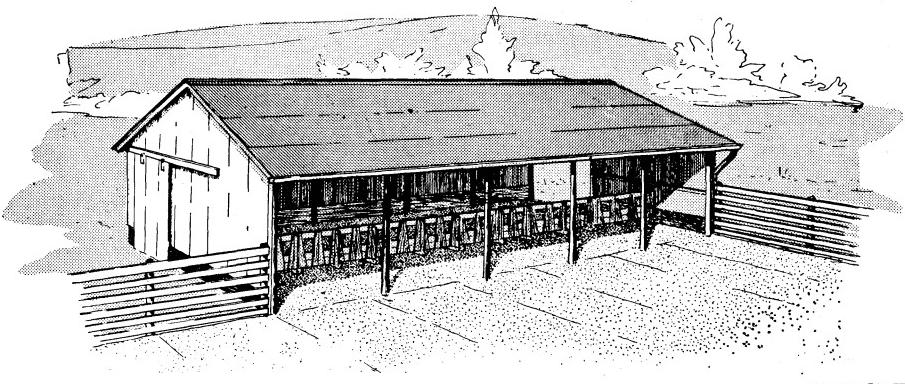
If working drawings of the plan desired are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

## **Pasture or Range Equipment**

### ***Shelters***

**Sheds.**—Use sheds or buildings for protecting cattle in cold, humid climates where winter rains are frequent. In warmer areas or where humidity is low, natural shelters usually are sufficient for beef cattle.

Beef cattle should not be shut in during the winter. Shedded space, when needed, should be about 40 square feet for cows, 20 for calves and yearlings, and 30 for feeders. Feedlot areas vary with drainage, rainfall, soil conditions, and paving. Under average conditions in the North Central States, unpaved lots should provide 400 square feet



BN-11571-X

**Figure 1.—Pole-type hay storage and feeding shed with movable fences for self-feeding. (Plan No. 5831.)**

per animal; in drier climates, 200 square feet per animal is sufficient, if the locations are well drained. Paved lots may be reduced to 60 square feet per animal.

A shed located on a well-drained site that has a southern exposure provides satisfactory shelter for beef cattle in most climates (fig. 1). If you use treated lumber, pole-type sheds provide cheaper shelter than sheds built on concrete or masonry foundations. Also, they have greater wind resistance than sheds built on foundations.

Where untreated lumber is used, support all timbers with concrete posts and build a concrete footing, extending well above ground, around the enclosed portion. Use adequate wind braces.

Shed roofing may be of any of the conventional types that provide adequate resistance to wind damage.

Place eave troughs on the shed where rain will drain from the roof into the feedlot.

The ends and back of the shed should be closed, except for doors that can be opened for ventilation if the shed is used in hot weather.

**Shade Shelters.**—Shade is important in either the feedlot or pasture where temperatures are high during summer months. When there are no trees, artificial shade is required. Shade shelters should be 10 to 12 feet high and built on well-set poles.

Provide 30 to 60 square feet of space for each mature animal. Place a straw covering over the roof to protect cattle from extreme heat (fig. 2). Tie it down securely with woven wire fencing. Heat-reflecting materials, such as sheet aluminum, also may be used as shade roofing.

Where possible, locate shade shelters on high ground to take advantage of best air circulation.

**Windbreaks.**—Windbreaks are desirable protection on ranches or feedlots located in cold climates where adequate natural protection is not available. They are as important as sheds on farms and often serve the same purposes.

A suitable windbreak is a board wall 8 feet high. It should be built on the windward side of a lot or pasture. An angled windbreak,



BN-11592-X

**Figure 2.—Shade shelter suitable for feedlot or pasture areas.**

enclosing all or part of two sides of a feedlot or fence corner, usually is preferable to one-side protection.

The framework for the windbreak may be of 6-inch posts. Set them at least 3 feet in the ground and about 7 feet apart. Attach four 2- by 4-inch horizontal nail ties that are long enough to reach three posts.

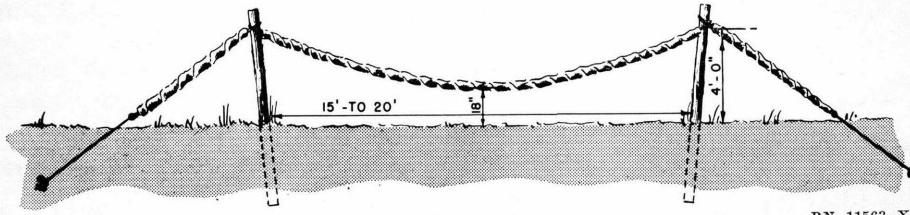
Join the nail ties on alternating posts to give strength to the framing. The wall may be 1-inch boards 8 feet long or corrugated metal.

### **Back Rubbers**

Back rubbers will do much to control flies while cattle are on pasture or range.

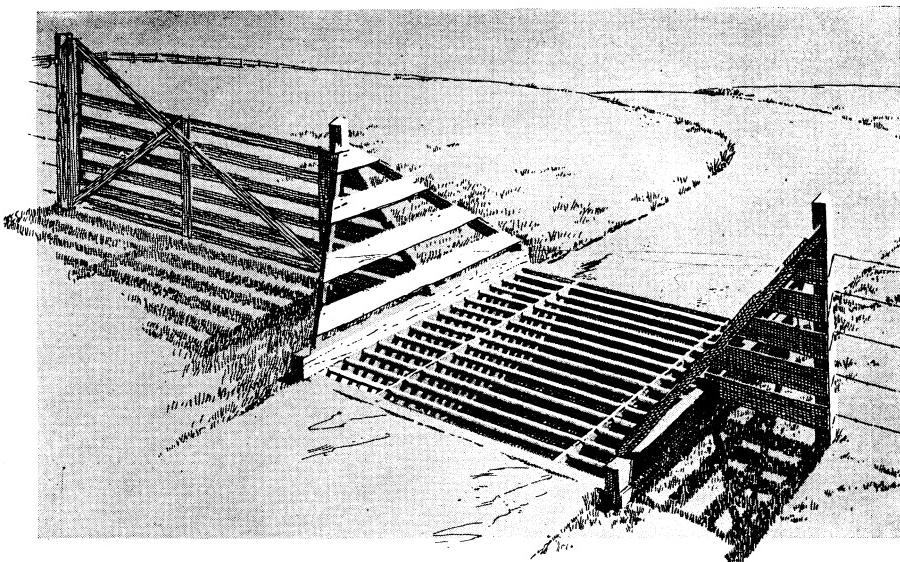
Commercial rubbers have reservoirs that automatically feed insecticide to the parts that cattle rub against.

Figure 3 shows a homemade rubber that will allow cattle to treat all parts of their bodies. To make it, place two posts in the ground 15 to 20 feet apart. Fasten a chain or cable made of two or three strands of barbed wire, about 4 feet high, at each post. Allow the chain or cable to sag to within 18 inches of the ground at the center. Wrap the chain or cable and any brace wires for the posts with three or four thicknesses of burlap; tie securely with binder twine. Saturate the sacks every few days with a good insecticide.



BN-11563-X

**Figure 3.—Back rubber.**



BN-11560-X

**Figure 4.—Cattle guard. (Plan No. 5752.)**

## **Cattle Guards**

Cattle guards located between pastures or furnishing truck access to pastures may save you considerable time. They can be built to turn many kinds of livestock.

A permanent cattle guard may be made of treated timbers, concrete and wood, or concrete and pipes (fig. 4). Where sloping fence ends are used, the guard need be only 10 feet wide.

Provide a drained pit the full length of the guard and a stock gate next to the guard for moving animals.

---

## **CAUTION**

Paint containing lead should not be used on cattle equipment or parts of buildings accessible to cattle. Lead poisoning may result when animals constantly lick or chew objects covered with paint containing this mineral. Calves are particularly susceptible.

---

## **Feedlot Equipment**

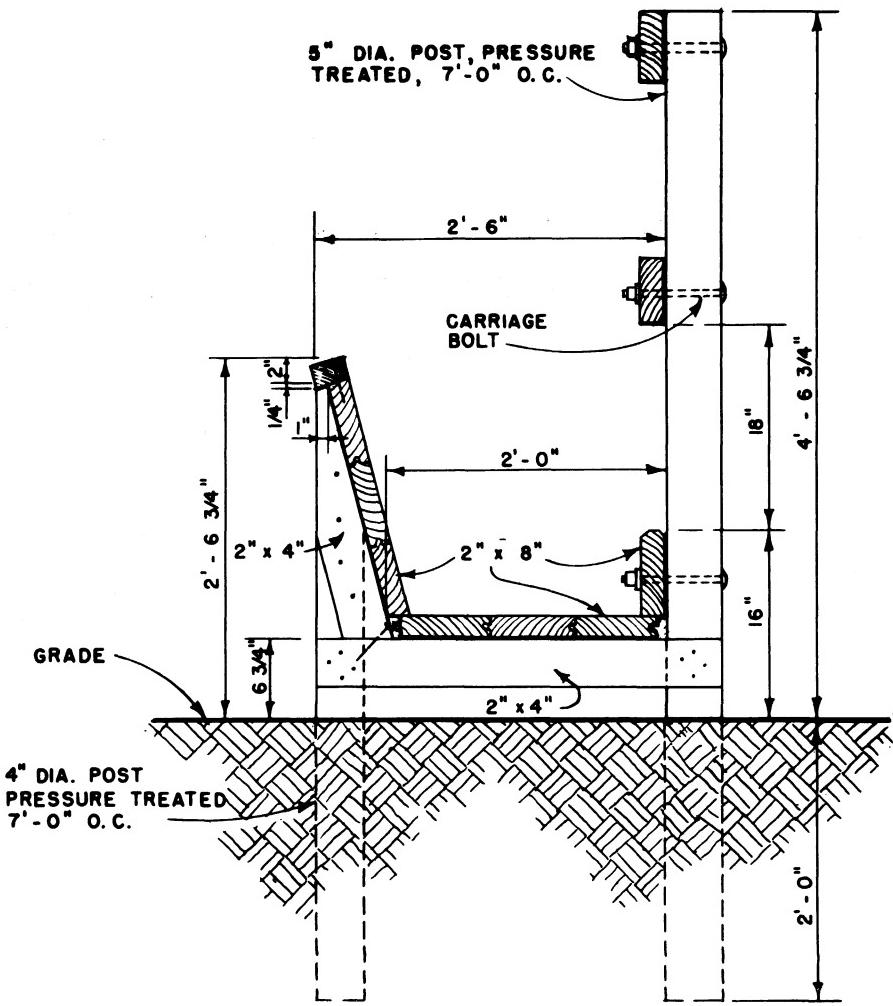
### **Arrangement**

Feedlots for fattening cattle should be located in well-drained areas convenient to feed-storage facilities. Drainage should be away from feed areas and driveways. The best location is a hillside with feed alleys and mangers extending along the high side. The least width or depth of the lot should run downgrade.

Rectangular-shaped lots require less pavement than odd-shaped lots. If you do not want to pave your feedlots entirely, pour a concrete slab about 12 feet wide the full length of the feeding mangers and water troughs.

Plan to feed concentrates, silage, and prepared feeds from a wagon, truck, or self-unloading vehicle, if you will be feeding a large number of cattle.

Where mechanical conveyors are used, a feed shelter and manger



**Figure 5.—Fence-line bunk construction detail.**

BN-11569-X

furnishes both shade and feeding facilities.

Bunks built into the fence line (fig. 5) eliminate entering the lots for feeding. Your feeding plan should provide a continuous route along the bunks. If you use this method of feeding, the feed storage need not be combined with the feed yard or shelter area.

For self-feeding, the feed yard and silo must be close together.

Allow a bunk space of 22 to 28 inches per animal if all animals eat at the same time. If feed is kept continuously before the animals, 12 inches per animal is ample.

The fence bunk wall should slope to furnish 18 to 20 inches width at the bottom. The bunk wall should be 16 to 19 inches high on the feed-lot side. The floor should be 6 inches off the ground.

## Silos

Silos are important equipment on many beef-cattle farms and ranches. Some of the types of silos in use are bunkers, trenches, stacks, snow-fence silos, and upright permanent silos.

Bunker and stack silos lend themselves to self-feeding. Practically all construction can be done with farm labor and equipment.

The snow-fence or wire-mesh silo, lined with weather-resistant paper or plastic film, is useful for temporary storage. It may be built cheaply and quickly for a surplus crop.

For permanent storage and minimum wastage of silage, trench silos are good if they are lined with cement plaster, concrete, masonry, treated wood, or some other durable material. Lining is not necessary in some areas.

The sides should slope 3 inches per foot of depth. For self-feeding, the bottom should slope about one-half inch per foot towards the feeding end.

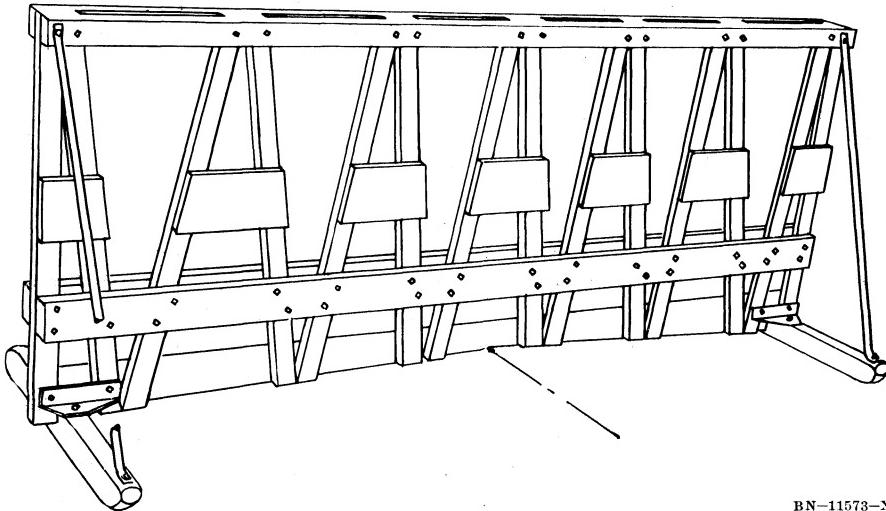
Provide drainage from the sides and ends. To do this, locate trench, stack, or bunker silos on high ground.

Where self-feeding is not practiced, remove a slice of silage daily from the end of the silage to prevent spoiling. For self-feeding, provide a fence or hurdle (fig. 6). Move the fence as the silage is eaten.

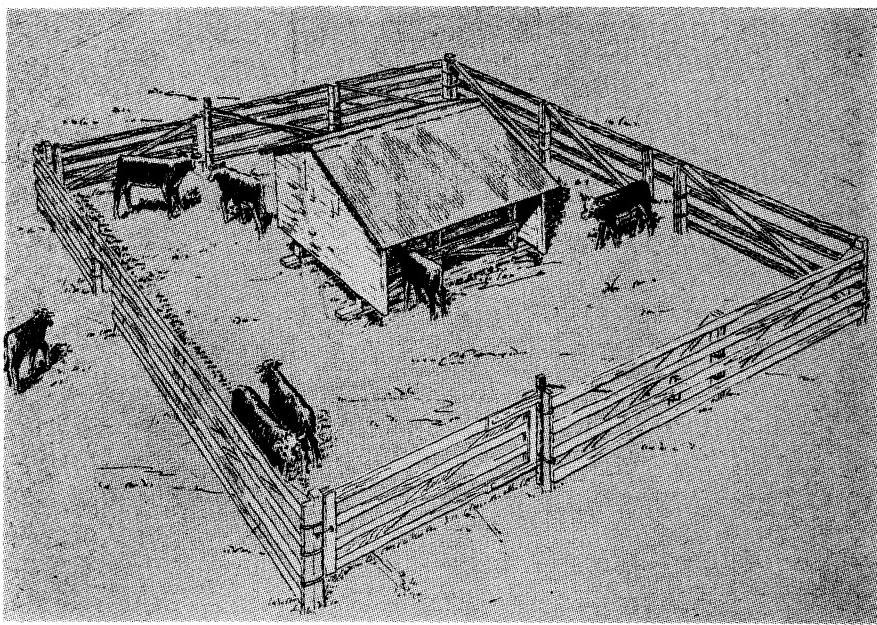
Further information on silos and silo construction can be obtained from your county agricultural agent or from the U.S. Department of Agriculture, Washington 25, D.C.

## Feeding Equipment

**Self-Feeders.**—Self-feeders and calf creeps are often used for purebred herds or where calves are to be fattened at an early age. Calf creeps containing self-feeders, placed in sheltered areas or near watering places, are used by nursing calves (fig. 7, 8, and 9).

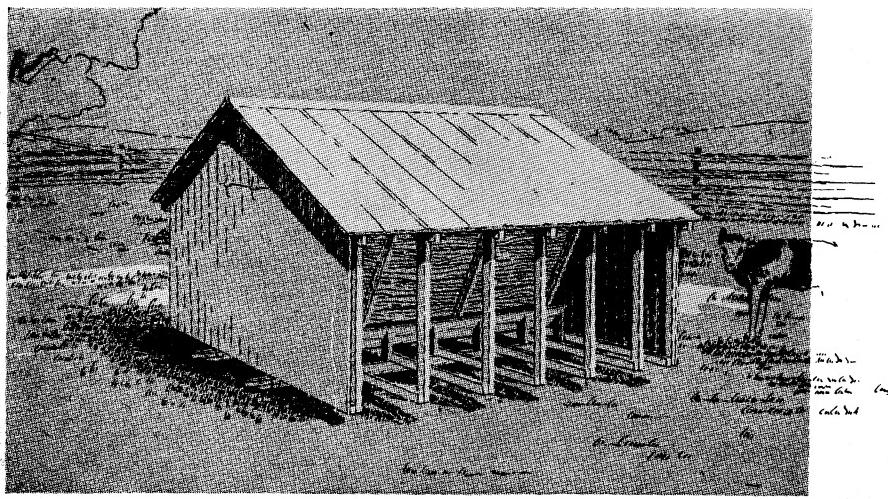


**Figure 6.—Self-feeding fence for bunker or trench silos. (Plan No. 5872.)**



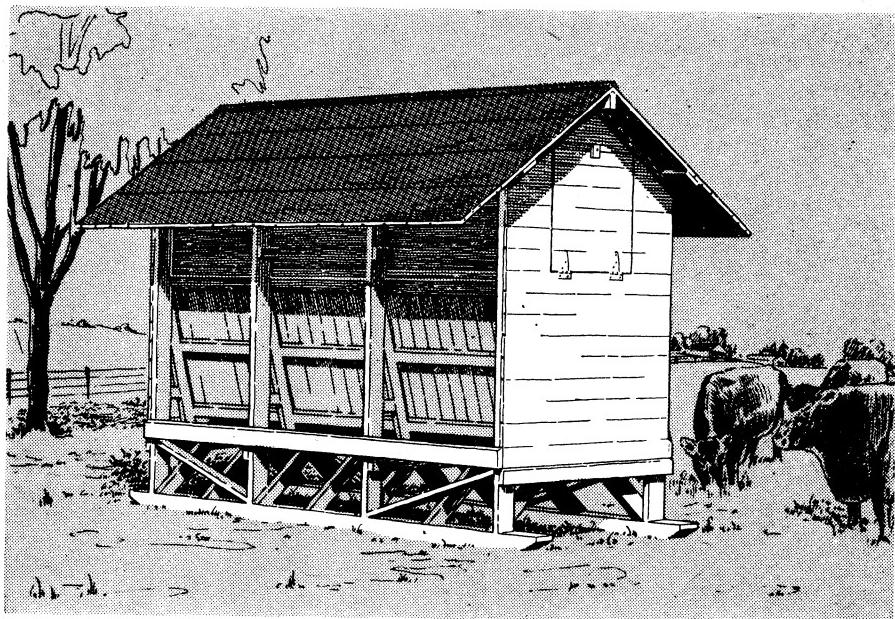
BN-11575-X

**Figure 7.—Calf creep and portable self-feeder. (Plan No. 5764.)**



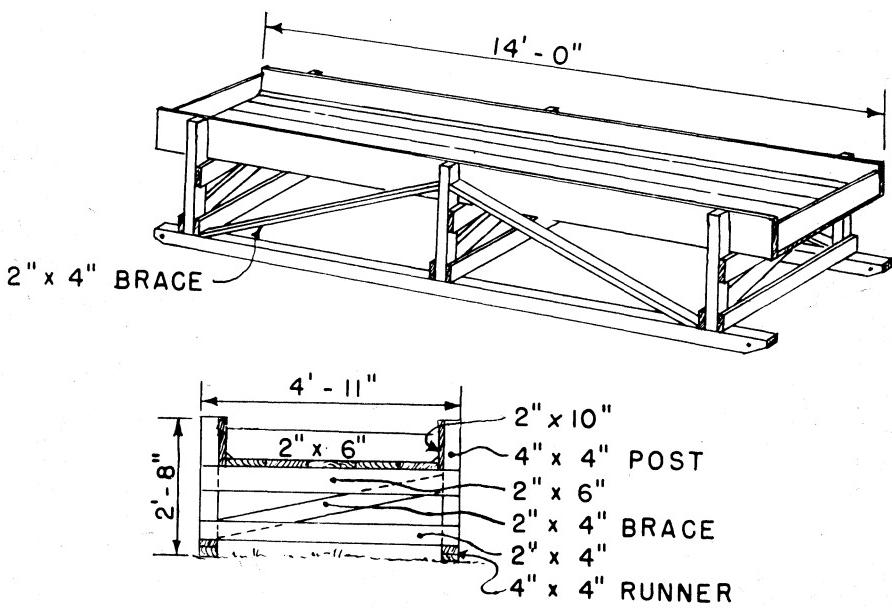
BN-11561-X

**Figure 8.—Stationary self-feeder for calves. (Plan No. 5768.)**



BN-11568-X

**Figure 9.—Self-feeder suitable for cattle of all ages. (Plan No. 5083.)**



BN-11557

**Figure 10.—Portable feed bunk.**

**Troughs.**—Portable feed troughs or bunks (fig. 10) built on skids can be easily moved. They are preferable to stationary troughs for small ranches or farms.

A feed trough should be well braced and wide enough to prevent feed waste. For troughs, use the most durable lumber that is readily available. If you use treated lumber for the trough part of the feed bunk, do not use lumber treated with poisonous materials.

Skids or other timber near the ground should be pressure treated. Where well-cured lumber is not available for trough flooring, lining the trough with tempered hardboard will minimize waste through cracks and prolong the life of the trough.

For large herds, fence-line bunks (fig. 11) that can be filled from a wagon or truck save labor.

Where stationary outdoor troughs or feed racks are used, place them in a well-drained area.

**Racks.**—If weather conditions permit, feed forage outside in a combination hayrack and feed trough. As with the feed trough, a portable hayrack is convenient. If you build hayracks in the cattle shelters, locate them so they can be filled from a wagon or truck (fig. 12).

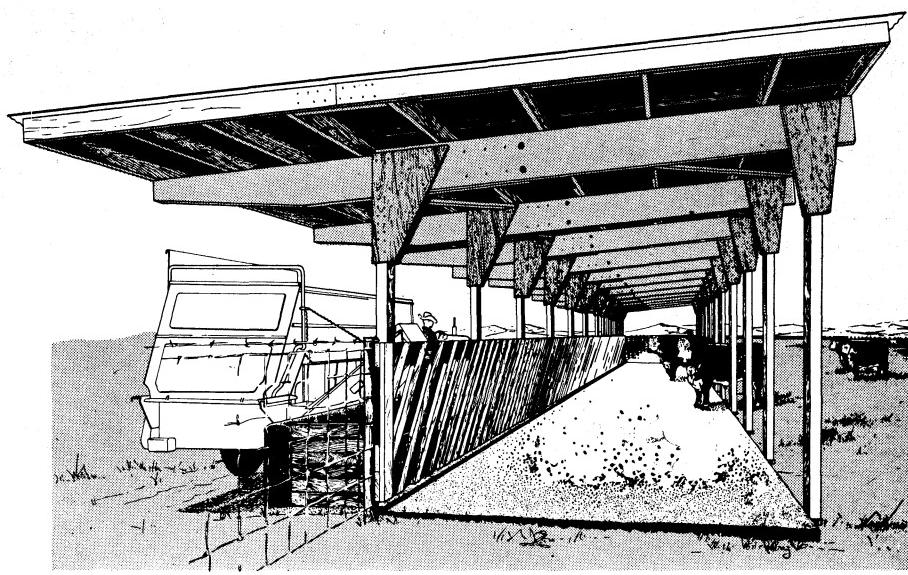
**Watering Tanks and Troughs.**—Most feedlot watering troughs are either concrete or galvanized iron tanks. Iron usually is cheaper but is not as durable as concrete. One tank placed in a fence line or corner may serve two or more lots.

Where large quantities of water are to be stored, round tanks are most practical. Less material is



*Figure 11.—Fence-line feed bunk.*

BN-11588-X



BN-11555-X

**Figure 12.—Covered fence-line feeder for cattle. (Plan No. 5854.)**

needed to build them than square or rectangular tanks.

A small round tank may be made with a section of concrete culvert pipe. (Plan No. 5909; see p. 13 of this bulletin.)

No matter which shape tank best suits your needs, build it so that it may be drained and cleaned easily.

Where bentonite is available, round galvanized tanks without bottoms can be used; seal the earth inside the tank wall before filling with water. Bentonite, a clay product, also may be used to prolong the life of a leaking tank or trough.

The best place to put a water tank depends on the climate.

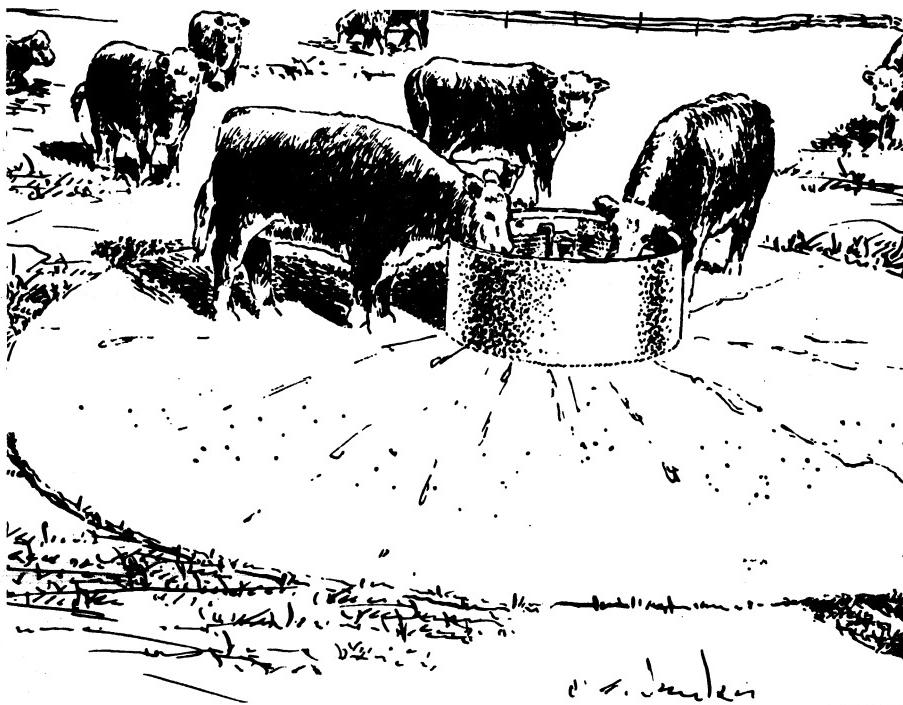
- In cold climates, place tanks in a protected location—behind a windbreak or in a shed—to minimize freezing.

- In humid climates, place tanks on a concrete platform to prevent a mudhole from forming.

Where the water is supplied irregularly—from a windmill—a separate storage tank is desirable. The tank should be large enough to insure a continuous supply. If you use an automatic or float-controlled intake, guard the mechanism against damage by cattle.

Water consumption will be about 5 to 12 gallons per animal per day, the amount depending on the feed and weather. In freezing weather, place a heating device in the tank. Cattle will not drink enough water if they are compelled to drink it ice cold.

Where calves and cows are on pasture, the tank or trough should be low enough for the calves to drink and not deep enough to be dangerous. The amount of water in the tank usually is controlled by a float valve connected with a pipe from a reservoir. This may be supplied with water pumped from a well by windmill.



BN-15505

**Figure 13.—Concrete watering tank. (Plan No. 5909.)**

The tank should be placed on ground that slopes away from the tank for a distance of about 20 feet. A paved surface around the tank is desirable; it should extend 8 to 10 feet from the tank (fig. 13).

Further information on automatic waterers and heaters can be obtained from your county agricultural agent or from the U.S. Department of Agriculture, Washington 25, D.C.

## Corral Equipment

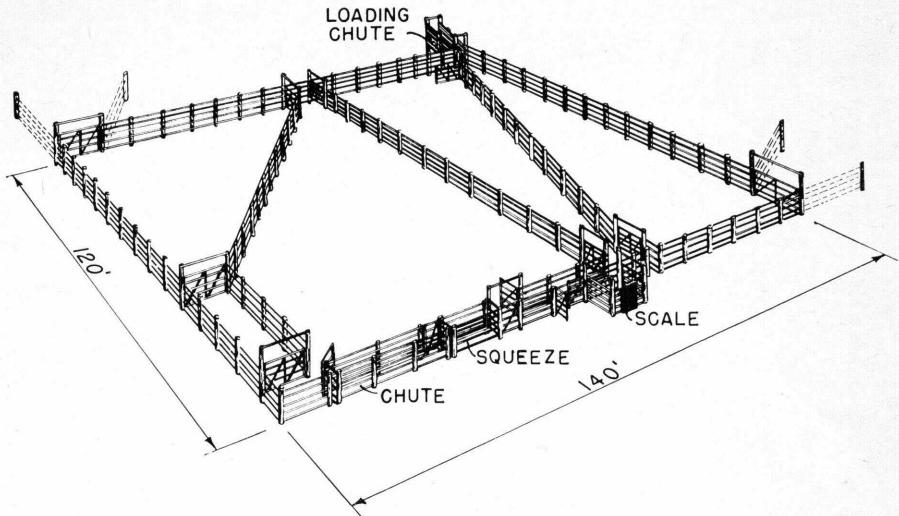
A convenient system of well-constructed and well-located corrals is a necessity for handling cattle. Corral designs differ with the number of cattle handled, the type of ranch or farm, and the location.

Provide small holding pastures or traps with water trough near the

corrals if water cannot be made available in the corral itself. Wing fences or animal lanes are a convenience at the corral entrances.

Scales, working chute, squeeze chute, a spray area, and loading facilities are also necessary. These areas must be located on ground that will provide adequate drainage.

The cutting area should be placed in the corral system so that as many pens are available to the cut gate as will be needed to accommodate all necessary group cuts. Figure 14 shows a system for use where a small number of cuts is required. Figure 15 shows a corral system that permits a larger number of cuts; this system includes holding pens, working chute, squeeze chute, loading chute, and scales.



BN-11572-X

**Figure 14.**—Corral system for use where a small number of cuts is required.

A dipping vat was formerly a necessity for a corral. Improvements in insecticides and power sprayers now make spraying the best way to control external parasites, except cattle fever ticks and the mites causing scab and mange.

### Fences

Many different types of fences are used in corrals. If poles are available, they may be used as all or part of the corral system. Fences around the corral and divider fences should be high enough



BN-11582

**Figure 15.**—Corral system for large numbers of cattle.

to discourage any animal from trying to escape.

Many good corrals have fences 6 feet high, or higher. Even for handling cattle that are comparatively tame, the minimum height for the fences should be 66 inches.

Treated 6-inch posts, set  $2\frac{1}{2}$  to 3 feet in the ground and spaced not more than 8 feet apart, give good strength and durability.

If planks are used in building the fence, spike them securely to the inside of the posts and use bolts where the greatest pressure from animals will occur. Use carriage bolts, with the nuts countersunk.

All corral gates must be strongly built and as high as the fences. Commercial gates may be used at all but pressure points where cattle

may be crowded. Strong, homemade gates are excellent for all corral use if they can be constructed as cheaply as commercial gates.

### Scales

A scale is one of the most valuable pieces of equipment for the beef cattle producer. Knowing the weights of breeding cattle, especially young animals, is a necessity in selecting breeding replacement stock.

Because scales are used so frequently they should be placed near the feeding pens or corrals. Portable scales (fig. 16) are often convenient for individual weighing. Several companies manufacture scales suitable for this purpose.



BN-11590-X

**Figure 16.—Portable scales are valuable for weighing individual animals.**

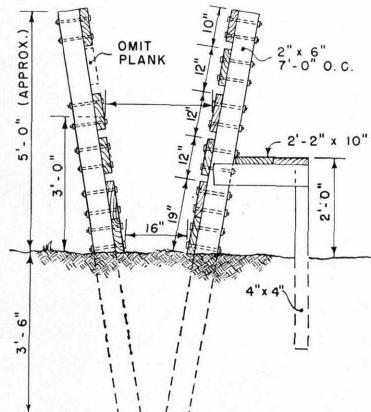
The scale pen should be placed on a platform. Accurate weights cannot be obtained otherwise because cattle will crowd against the sides of the pen and cause errors in the recorded weight. A scale pen plan is available. (Plan No. 5932; see p. 15 of this bulletin.)

## Chutes

Many types of working chutes are used. Any chute should be long enough to hold several mature animals—at least six animals at a time for a large herd.

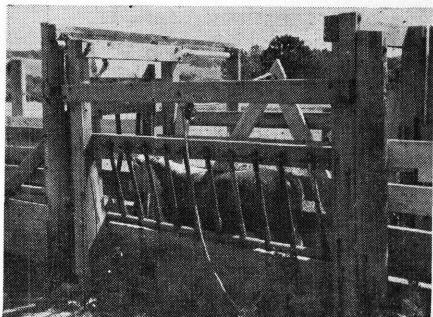
Where both mature and young cattle are handled, a chute narrow at the bottom will prevent young animals from turning around in the chute (fig. 17).

A squeeze chute with a side-opening gate, built into the working chute, is useful when an animal must be examined or treated (fig. 18). This can be made by mounting a stanchion gate on a heavy barn door track so that it can be pushed aside. When not used, this squeeze becomes a part of the working chute.



BN-11564-X

**Figure 17.—Chute with sloping sides.**



BN-11583

**Figure 18.—Squeeze chute with a side-opening gate. It is built into the working chute.**

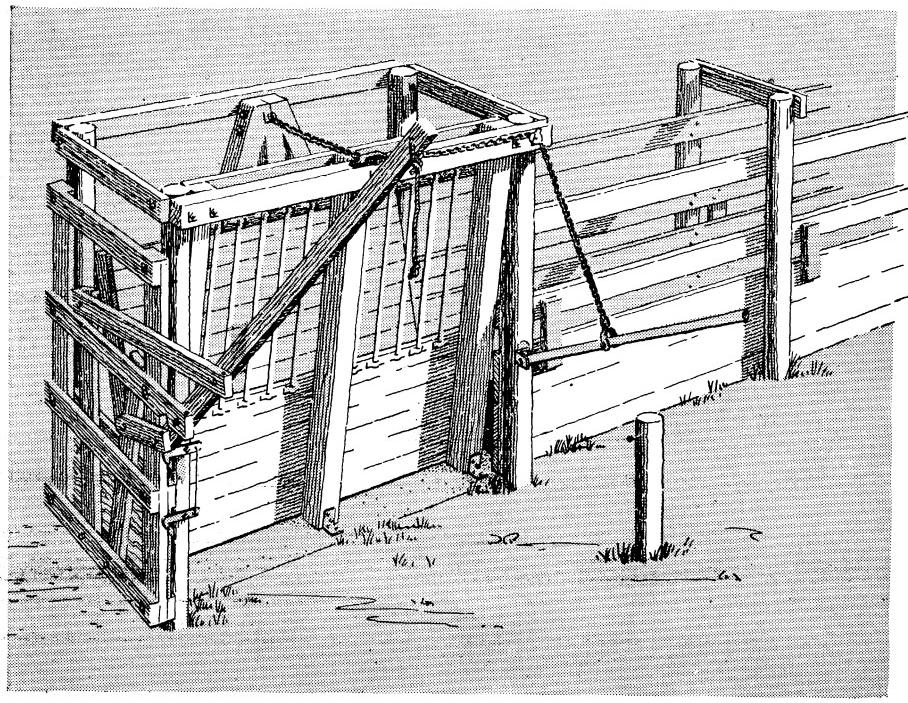
**Dehorning and Branding.**—A squeeze chute may be used for dehorning, castrating, branding, and administering other treatments (fig. 19). Throwing has given way to the squeeze chute because of the injuries that often occur and the labor involved in roping and throwing cattle.

A squeeze used with a lengthy approach chute speeds up these operations. The approach chute may be used as a branding chute. A better job of branding can be done where an animal is held securely in a squeeze.

A simple squeeze constructed in a long chute is valuable for handling individual animals when treating them for diseases or injuries, or when bleeding or vaccinating them.

In building a squeeze, arrange the upright bars on one or both sides so that they can be swung down to permit free access to any part of an animal's side. Also, provide a way to get to an animal's feet for treatment or examination.

A chute built with a side exit is especially convenient; when an animal goes down in the squeeze, the



BN-570-X

**Figure 19.—Squeeze chute with headgate. This type of chute is suitable for dehorning. (Plan No. 5791.)**

side exit allows freeing the animal with a minimum of effort.

For dehorning mature cattle, the front of the chute must be built to hold the animal's head firmly. Branding and dehorning are often done at the same time in the squeeze. Or, branding may be done in the working chute (fig. 18).

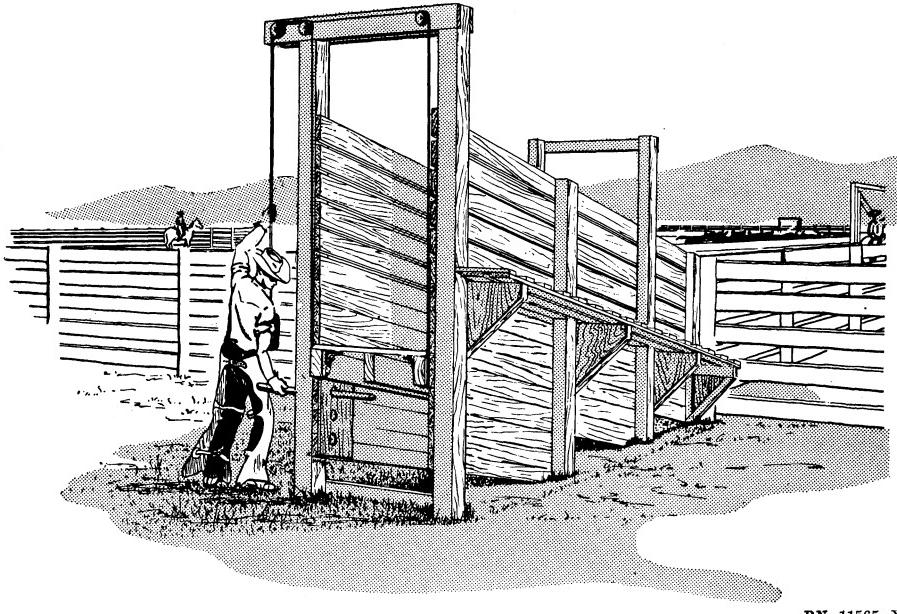
Further information on dehorning, castrating, branding, and marking beef cattle can be obtained from your county agricultural agent or from the U.S. Department of Agriculture, Washington 25, D.C.

A stove for heating the branding iron may be made from an oil drum. Remove one end of the drum.

Then, cut an opening about 12 inches by 12 inches at the center of the drum. Cut only three sides of the opening and bend the metal outward to form a shelf for the irons.

A wood fire in this stove will heat the irons quickly and use a minimum of fuel. This or a similar stove reduces the fire hazard around the corral or pasture.

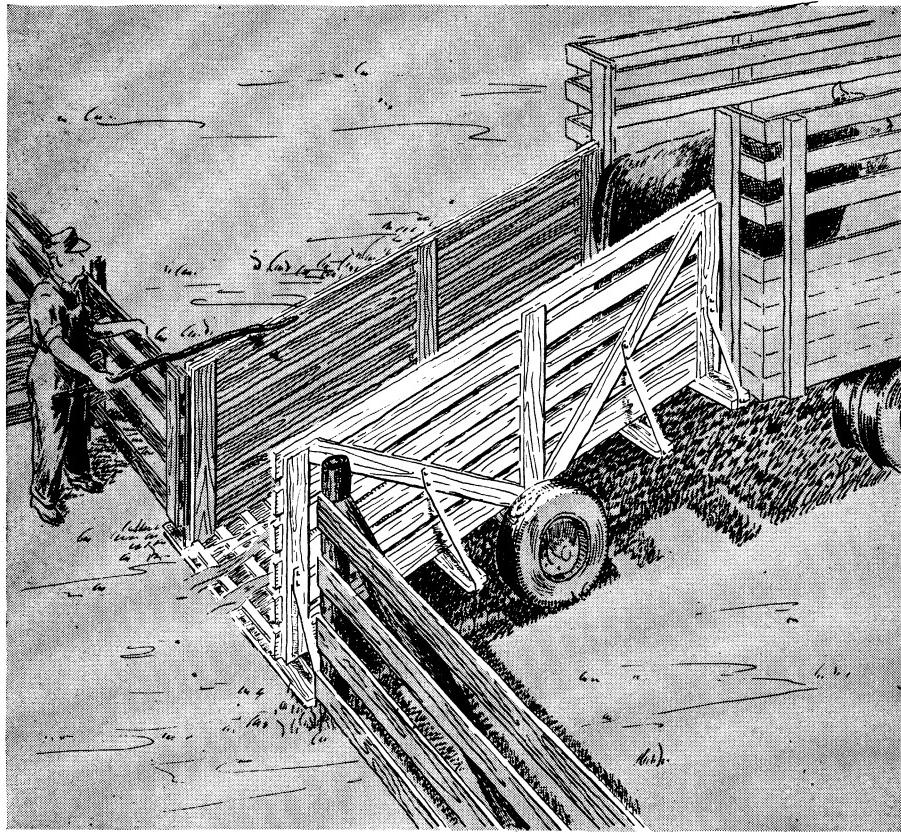
**Loading.**—A loading chute is a necessity on any stock farm or ranch. Both stationary and portable chutes are used (figs. 20 and 21). A permanent chute should be located near the stock scales and should have ample room for easy truck approach.



**Figure 20.—Stationary loading chute with counterweight for adjusting ramp height. (Plan No. 5852.)**



1022430796



**Figure 21.—Portable loading chute. (Plan No. 5681.)**

BN-11579-X



1022430796

# Protect Your Family and Farm from **FIRE**



**Repair defective chimneys, spark arresters, flues, stovepipes, and heating and cooking equipment.**

**Store gasoline and other flammables in approved containers and locations.**

**Remove fire hazards from storage areas.**

**Be sure electric wiring is safe and adequate . . . electric circuits are fused properly . . . electric equipment is in good repair.**

**See that lightning rods are properly grounded. Use properly grounded arresters on radio and television antennas.**

**Keep matches and chemicals away from children.**

**Have fire-fighting equipment ready.**

**FIRE---Hard to stop! Easy to prevent!**